

Smoke and Carbon Monoxide Alarm Inspection Requirements for One and Two Family Dwellings



Division of Fire Safety
Department of Fire Services

Presentation Scope:

This program will outline the smoke and carbon monoxide (CO) alarm requirements for the inspection of detached one and two family dwellings as it relates to M.G.L. c. 148 s. 26F and 26F½, and 527 CMR 31.00 and recently revised 527 CMR 32.00.



Smoke & CO Alarm Inspection Requirements

Detached One and Two Family Dwellings Only:

Single Family:



Duplexes:

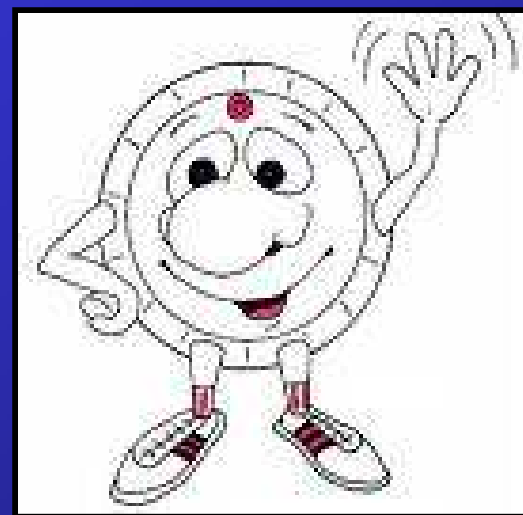


Smoke & CO Alarm Inspection Requirements

The presentation does NOT cover multiple family dwellings:



Smoke Detector Requirements for One and Two Family Dwellings



M.G.L. c. 148 s. 26F

M.G.L. c. 148 s. 26F

**Residential buildings or structures;
equipping with smoke detectors upon
sale or transfer**



M.G.L. c. 148 s. 26F

All buildings or structures occupied in whole or in part for residential purposes and not regulated by M.G.L. c. 148, s. 26A, 26B or 26C shall, upon the sale or transfer of such building or structure, be equipped by the seller with approved smoke detectors as provided in M.G.L. c. 148, s. 26E.

The head of the fire department shall enforce the provisions of this section.

What are s. 26A, 26B and 26C?:

Section 26A:

- Sprinkler systems in high-rises.

Section 26B:

- Residential buildings must have a automatic fire warning system as required in the Massachusetts State Building Code (MSBC – 780 CMR).

Section 26C:

- Smoke/heat detectors in apartment houses containing 6 or more dwelling units, hotels, boarding or lodging houses, or family hotels.

M.G.L. c. 148 s. 26B

Every building $\leq 70'$ in height above the mean grade erected or substantially altered to be occupied for residential purposes shall be protected with an approved automatic fire warning system in accordance with the provisions of the state building code. Such system shall include the features of automatic smoke detection in conjunction with the approved fire detection devices.

The head of the fire department as defined in section one shall enforce the provisions of this section.

M.S.B.C.

MSBC was first adopted on January 1st, 1975.

- It was the 2nd Edition.
- There was never a 1st Edition.

Since 1975 there has always been a MSBC in effect.

Only residential structures built prior to 1975, and not substantially altered to constitute new are subject to M.G.L. c. 148 s. 26E.

Smoke and CO Alarm Requirements

Pre-1975 Dwellings



Not substantially altered to constitute new.

M.G.L. c. 148 s. 26F

All buildings or structures occupied in whole or in part for residential purposes and not regulated by sections 26A, 26B or 26C shall, upon the sale or transfer of such building or structure, be equipped by the seller with approved smoke detectors as provided in M.G.L. c. 148 s. 26E.

M.G.L. c. 148 s. 26E (a)

All one and two family dwellings occupied in whole or in part for residential purposes shall be equipped with approved smoke detectors.

- *An approved monitored battery powered smoke detector.*
- *An approved primary power smoke detector.*

M.G.L. c. 148 s. 26E (a)

Owners of such buildings or structures shall install approved smoke detectors:

- On each level of habitation.
- On the basement level.
- Outside each *separate sleeping area*.
- On the ceiling of each stairway leading to the floor above, near the base of, but not within each stairway.

M.G.L. c. 148 s. 26D

As used in this section and sections 26E and 26F the following terms shall have the following meanings:

Separate sleeping area:

The area or areas of the dwelling unit in which the bedrooms, or sleeping rooms, are located.

Bedrooms, or sleeping rooms, separated by other use areas such as kitchens or living rooms, but not bathrooms, shall be considered as separate sleeping areas.

M.G.L. c. 148 s. 26D

As used in this section and sections 26E and 26F the following terms shall have the following meanings:

Approved monitored battery power smoke detector:

A smoke detector which is activated by a battery power source provided that the battery is monitored.

Approved primary power smoke detector:

A smoke detector which is activated by being permanently wired to a source of AC electric power or connected to a source of AC electric power by an UL approved cord with a strain relief and plug retainer.

Approved Smoke Detectors

Approved monitored battery power smoke detector and approved primary power smoke detector, as defined in M.G.L. c. 148 s. 26D and used in M.G.L. c. 148 s. 26E and 26F, recently have been further defined in 527 CMR 32.00 – Approved Smoke Detectors.

527 CMR 32.00
Approved Smoke Detectors



Approved Smoke Detectors



***Actually not approved, its wireless - but its a heat detector.**

Approved Smoke Detectors

Type of detection methods:

- Photoelectric

- More effective in detecting smoldering fires.
- Less susceptible to nuisance alarms from:
 - Cooking smoke
 - Steam (cooking, showers, baths, etc...)

- Ionization

- More effective in detecting flaming fires.
- Less expensive.

Approved Smoke Detectors

Important reminders:

- Both detector types have been around for years.
- Both detectors are effective in detecting smoke.
- Does not prohibit the use of ionization detectors.
- Decreasing nuisance alarms reduces the chance of homeowner removing the detector.

Key is to have working smoke detectors!

527 CMR 32.00

Originally adopted on January 8th, 2009, with an effective date of January 1st, 2010.

At the BFPR's December 2009 meeting, there were several modifications made to 527 CMR 32.00 (including a new effective date of April 5th, 2010).

*Ensure you have the December 2009 version.

527 CMR 32.00

Effective date of April 5th, 2010.

527 CMR 32.01

Purpose:

To enhance public safety by providing further technical qualification to the definitions of:

- Approved monitored battery power smoke detector.
- Approved primary power smoke detector.

Used in M.G.L. c. 148 s. 26D, 26E and 26F.

527 CMR 32.01

Scope:

The provisions of 527 CMR 32.00 shall not apply to buildings constructed, altered or modified after January 1st, 1975, which are subject to the provisions of MSBC.

527 CMR 32.01

Scope:

As of April 5th, 2010, 527 CMR 32.00 shall be the applicable standard for sellers to comply with the provisions of M.G.L. c. 148 s. 26F upon sale and transfer of certain buildings or structures occupied in whole or in part for residential purposes.

527 CMR 32.01

Scope:

The provisions of 527 CMR 32.00 shall not apply to:

- Dwellings permitted after January 1st, 1975.
- Dwellings which have been altered or modified.

Since they are subject to the provisions of M.S.B.C..

527 CMR 32.02

General Requirements:

An approved monitored battery power smoke detector and an approved primary power smoke detector, as defined in M.G.L. c. 148 s. 26D, is a working device that employs both ionization and photoelectric technology, in either a single unit or by means of two separate units to determine an alarm condition.

527 CMR 32.02 (1)

General Requirements:

An approved monitored battery power smoke detector, as defined in M.G.L. c. 148 s. 26D, shall consist of a working device that is listed and employs both ionization and photoelectric technology, in either a single unit or by means of two separate units to determine an alarm condition.

- Except for smoke detectors located in areas regulated by 527 CMR 32.03.

527 CMR 32.02 (2)

General Requirements:

An approved primary power smoke detector, as defined in M.G.L. c. 148 s. 26D, shall consist of a working device that is listed and employs both ionization and photoelectric technology, in either a single unit or by means of two separate units to determine an alarm condition.

- Except for smoke detectors located in areas regulated by 527 CMR 32.03.

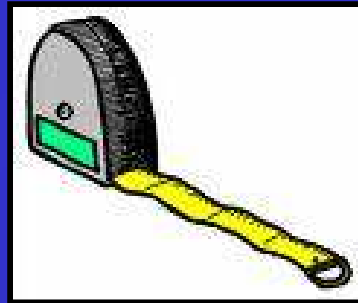
527 CMR 32.02

‘A device that employs both ionization and photoelectric technology, in either a single unit or by means of two separate units’

- Dual detector (Photoelectric/Ionization).
- Two separate detectors.
 - A photoelectric detector and a separate ionization detector.
- Combination detector and a separate detector.
 - Photoelectric/CO detector and a separate ionization detector.
 - Ionization/CO detector and a separate photoelectric detector.

527 CMR 32.03

A smoke detector installed within 20' of an entryway to a kitchen, or bathroom containing a bathtub or shower, shall not utilize ionization technology.



The 20' measurement shall include and extend into common areas of a multi-family dwelling.

527 CMR 32.02 (3)

Low voltage systems:

Compliance with 527 CMR 32.02 can be met by a low voltage system of wired or wireless connected listed photoelectric smoke detectors.

- Also called household fire warning systems.
- Low voltage ionization smoke detectors are no longer manufactured.

Certificate of Compliance

Certificate of Compliance



FP-007-C
(Rev. 09/08)

The Commonwealth of Massachusetts

CERTIFICATE OF COMPLIANCE M.G.L. CHAPTER 148, SECTIONS 26F, 26F½

City or Town Anytown Date: March 17th, 2010

This Certifies that the property located at 4 Uxbridge Road
has been equipped with approved smoke detectors, and carbon monoxide alarms* and was found to
be in compliance with Massachusetts General Law, Chapter 148 Sections 26F, 26F½ and 527 CMR
31, et seq.

Inspection/Testing completed on: 03/17/2010 By: Fire Marshal Bill
Inspector

Fee Paid: \$25.00 Head of Fire Department: Fire Chief Jonathan Doe

Note: This certificate expires sixty (60) days after date of issue.

SELLER'S COPY

What happens on April 5th, 2010?

Certificate of Compliance

FP-007-C:


- Expires 60 days after issuance.
- If the certificate is issued prior to April 5th, 2010:
 - It is good for 60 days; even if the closing is after April 5th.
 - Certificate indicates compliant at time of inspection.
 - If the certificate expires, then the home is required to meet the provisions of 527 CMR 32.00.

Distinguishing Between a Photoelectric and a Ionization Detector

Distinguishing Between a Photoelectric and a Ionization Detector

On the packaging of new smoke detectors, it will state which detection principle(s) is utilized in the smoke detector. The packaging could also have the following symbol to represent the detection principle:

Photoelectric: 

Ionization: 

Dual: 
- or -



Distinguishing Between a Photoelectric and a Ionization Detector

Most newer smoke detectors will have a symbol or sticker visible on the external housing.



Distinguishing Between a Photoelectric and a Ionization Detector

Most newer smoke detectors will have a symbol or a label visible on the external housing.

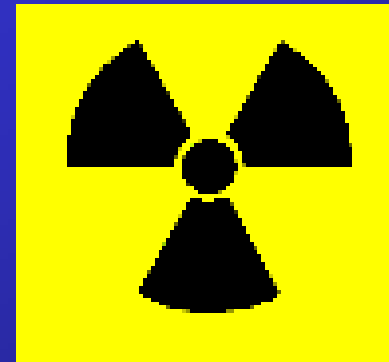


Distinguishing Between a Photoelectric and a Ionization Detector

If there is no symbol or sticker visible on the external housing, then the type of is typically on the back of the detector.

If not, ionization smoke detectors will have on the back:

- ‘Americium’ and/or;
- A trefoil, the international radiation symbol



Pre-1975 Dwellings Smoke Detector Summary

Pre-1975 Dwellings

Smoke Detector Summary

Approved smoke detectors shall be installed on:

- On each level of habitation.
- On the basement level.
- Outside each separate sleeping area.
- On the ceiling of each stairway leading to the floor above, near the base of, but not within each stairway.

Pre-1975 Dwellings

Smoke Detector Summary

The smoke detectors shall be employ both ionization and photoelectric technology, in either a single unit or by means of two separate units.

Photoelectric only detectors shall be utilized when:

- Installed within 20' of an entryway to a kitchen, or bathroom containing a bathtub or shower.
- A low voltage system of wired or wireless connected smoke detectors.

Pre-1975 Dwellings Smoke Detector Examples

Detector Example



◎ - SD (Photo)

● - SD (Ion)

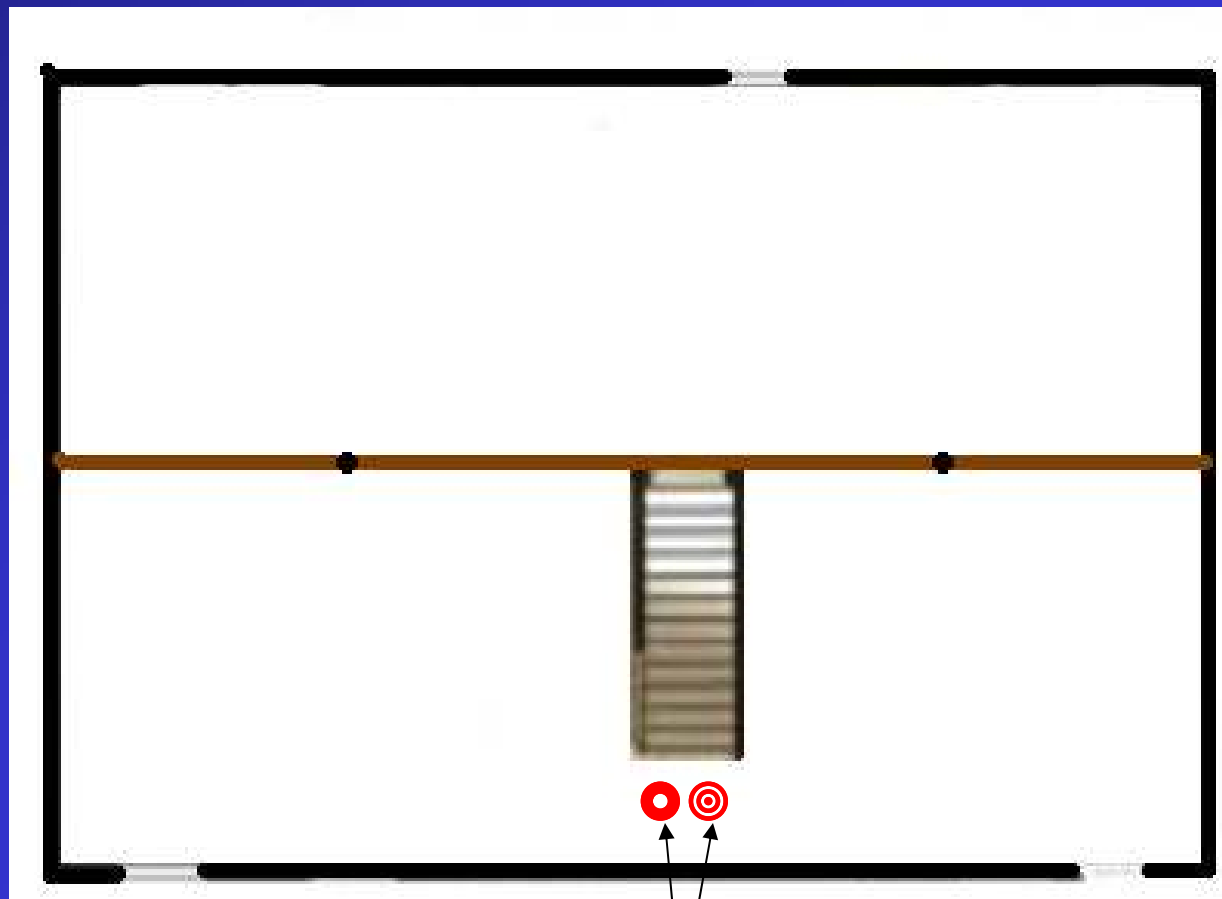
Detector Example



◎ - SD (Photo)

● - SD (Ion)

Detector Example

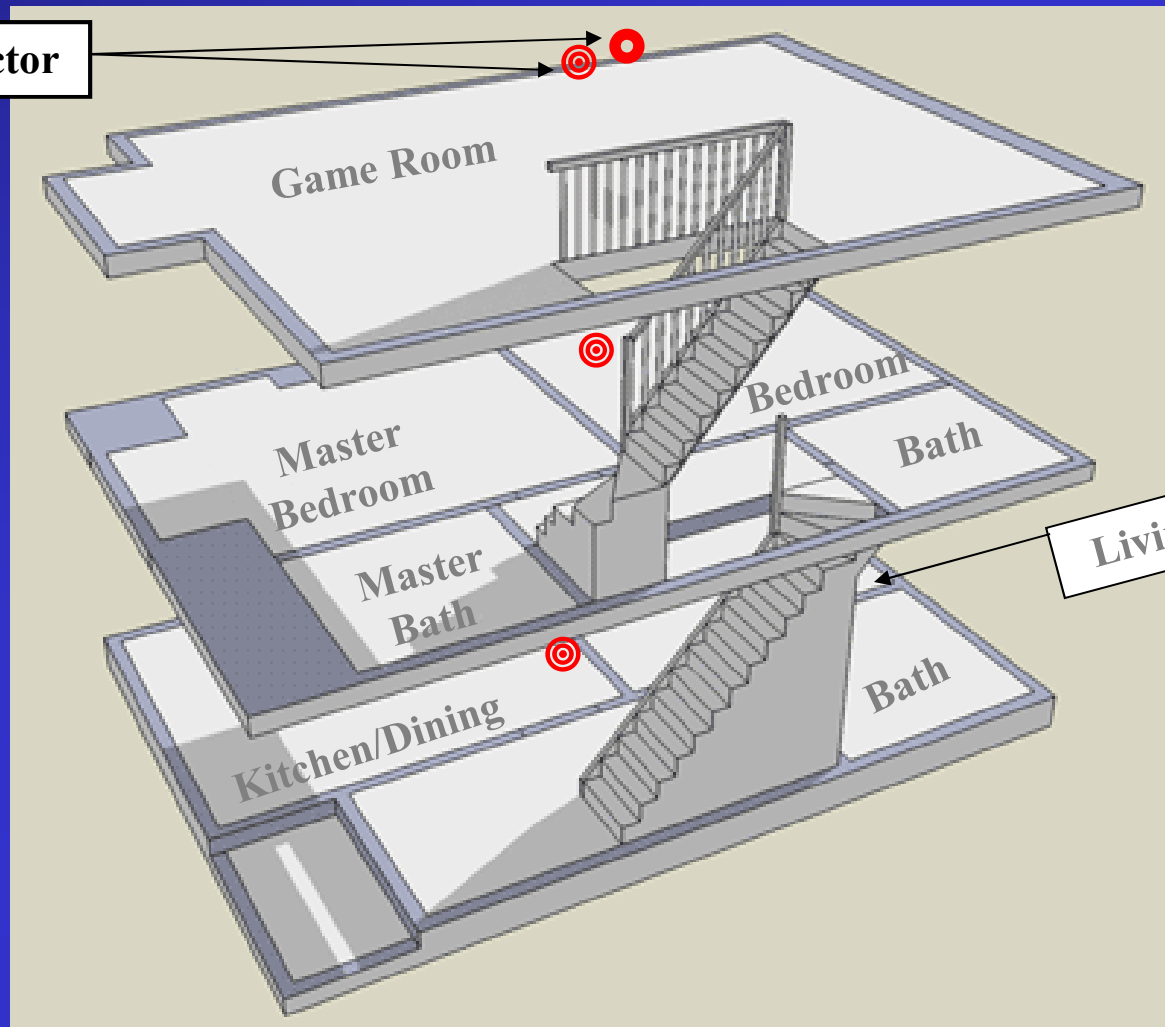


◎ - SD (Photo)
● - SD (Ion)

Or a dual detector

Detector Example

Or a dual detector

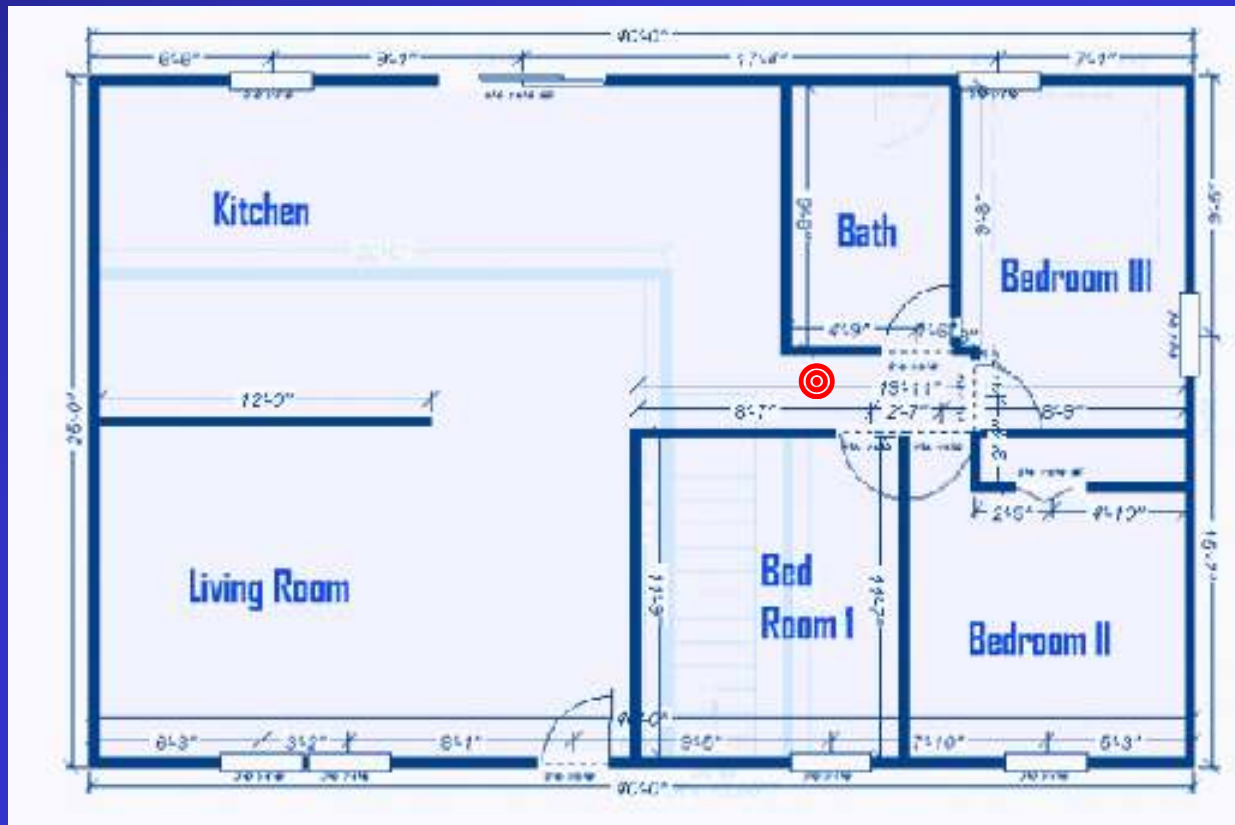


⊙ - SD (Photo)

● - SD (Ion)

Living Room

Detector Example



- ◎ - SD (Photo)
- - SD (Ion)

Detector Example

First Floor (1)

⊙ - SD (Photo)

● - SD (Ion)



Detector Example

First Floor (2)

⊙ - SD (Photo)

● - SD (Ion)



Detector Example

First Floor (3)

⊙ - SD (Photo)

● - SD (Ion)

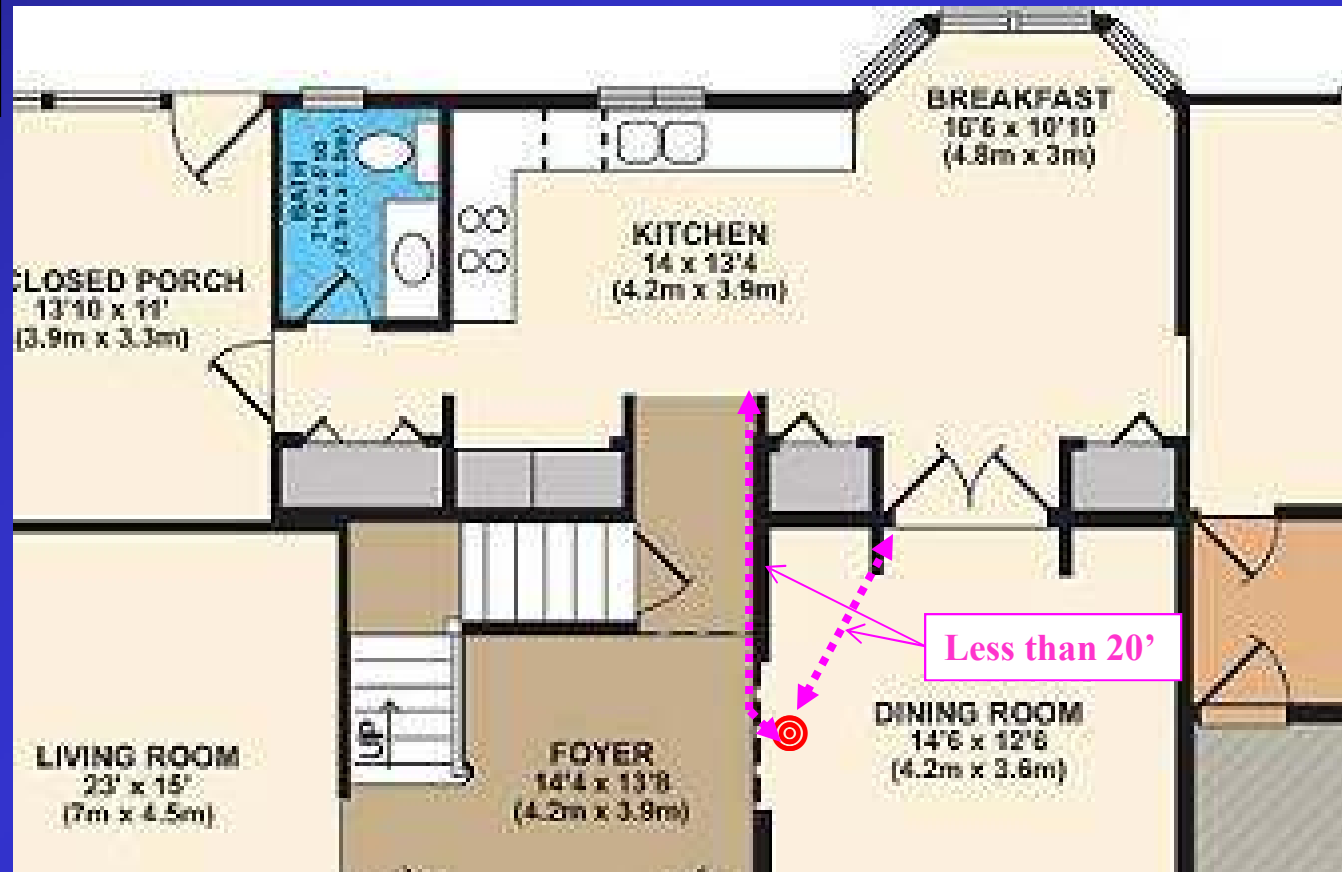


Detector Example

First Floor (3)

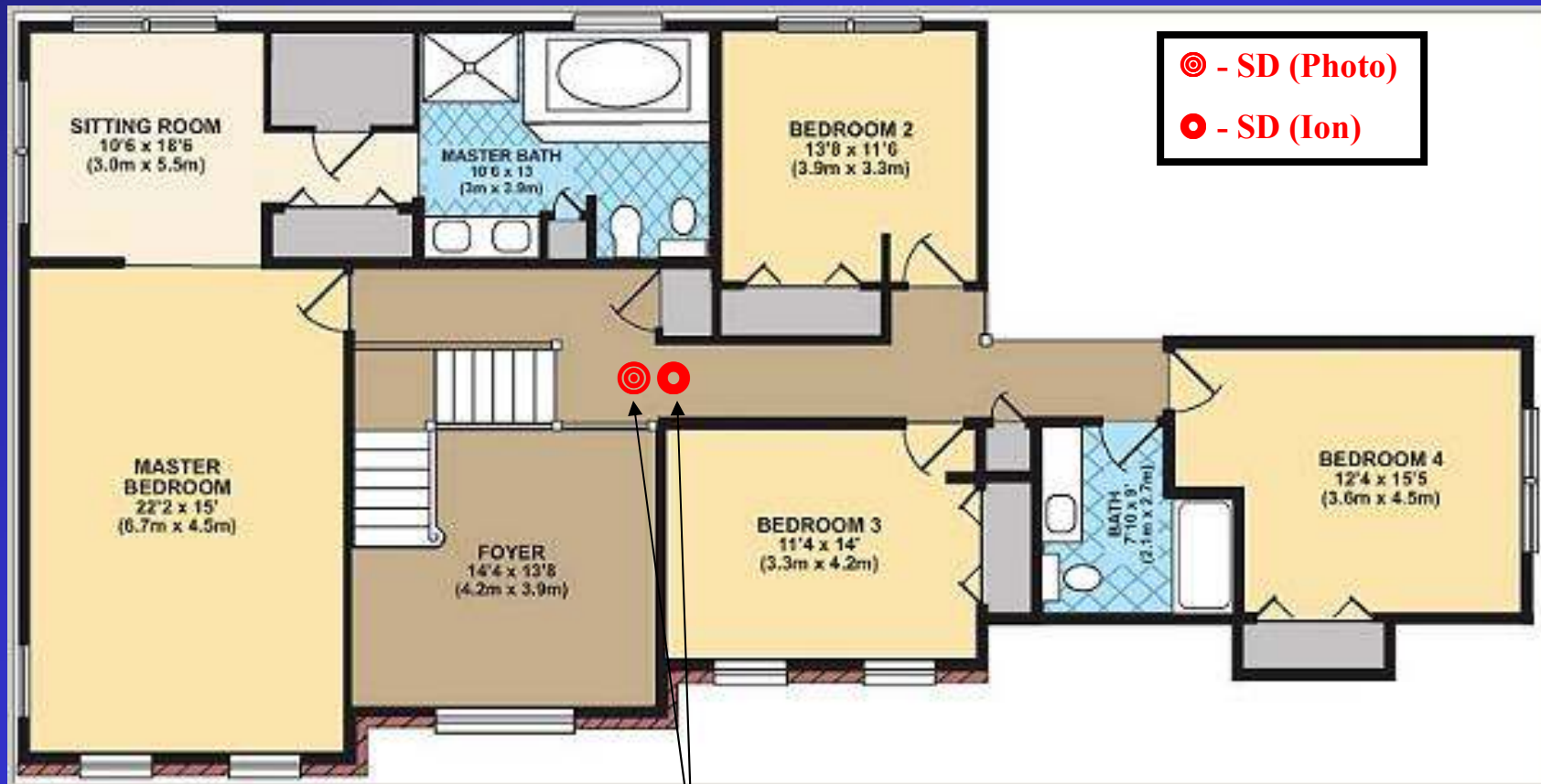
⊙ - SD (Photo)

● - SD (Ion)



Detector Example

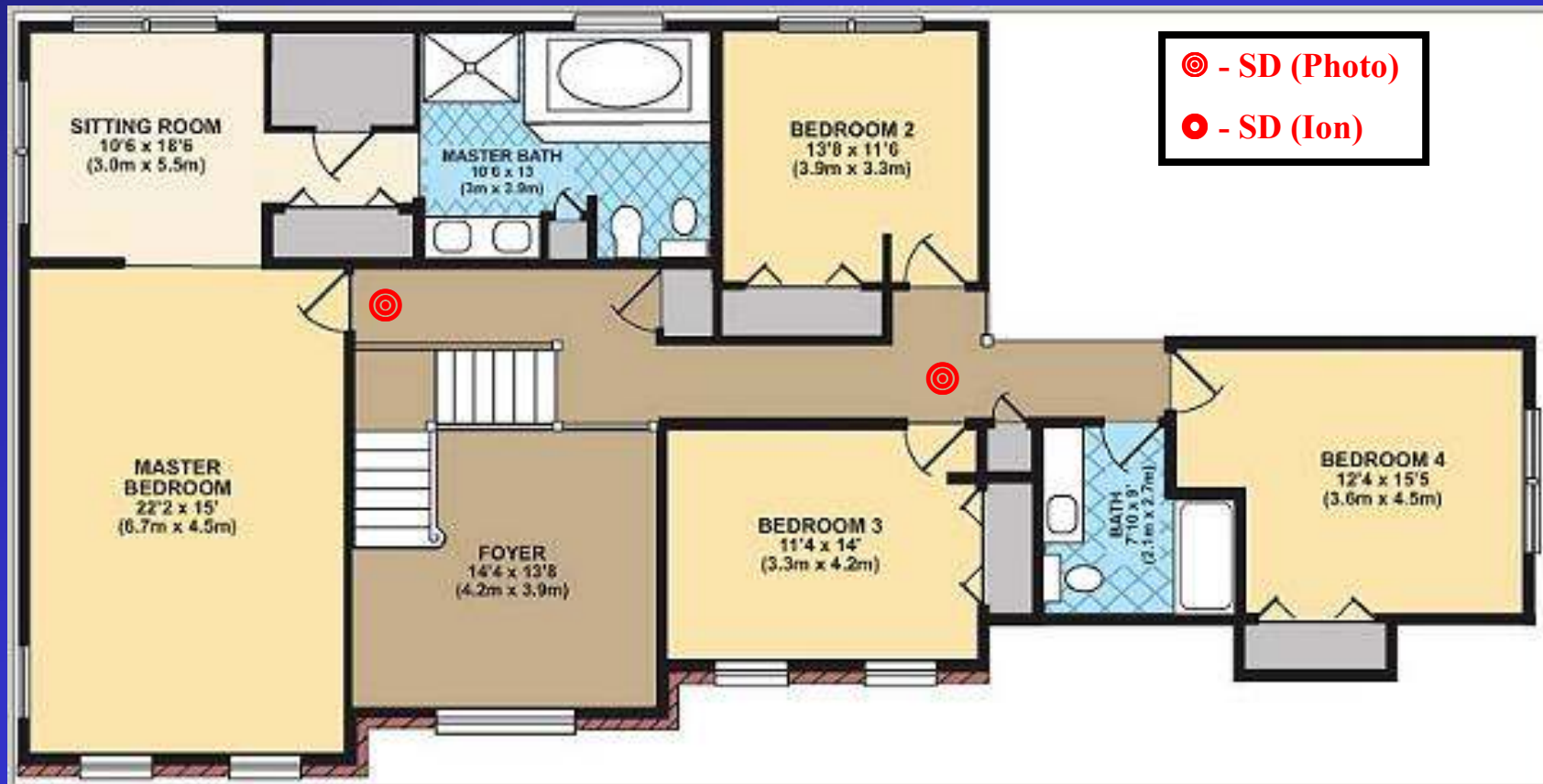
Second Floor (1)



Or a dual detector

Detector Example

Second Floor (2)



Detector Example

Second Floor (2)

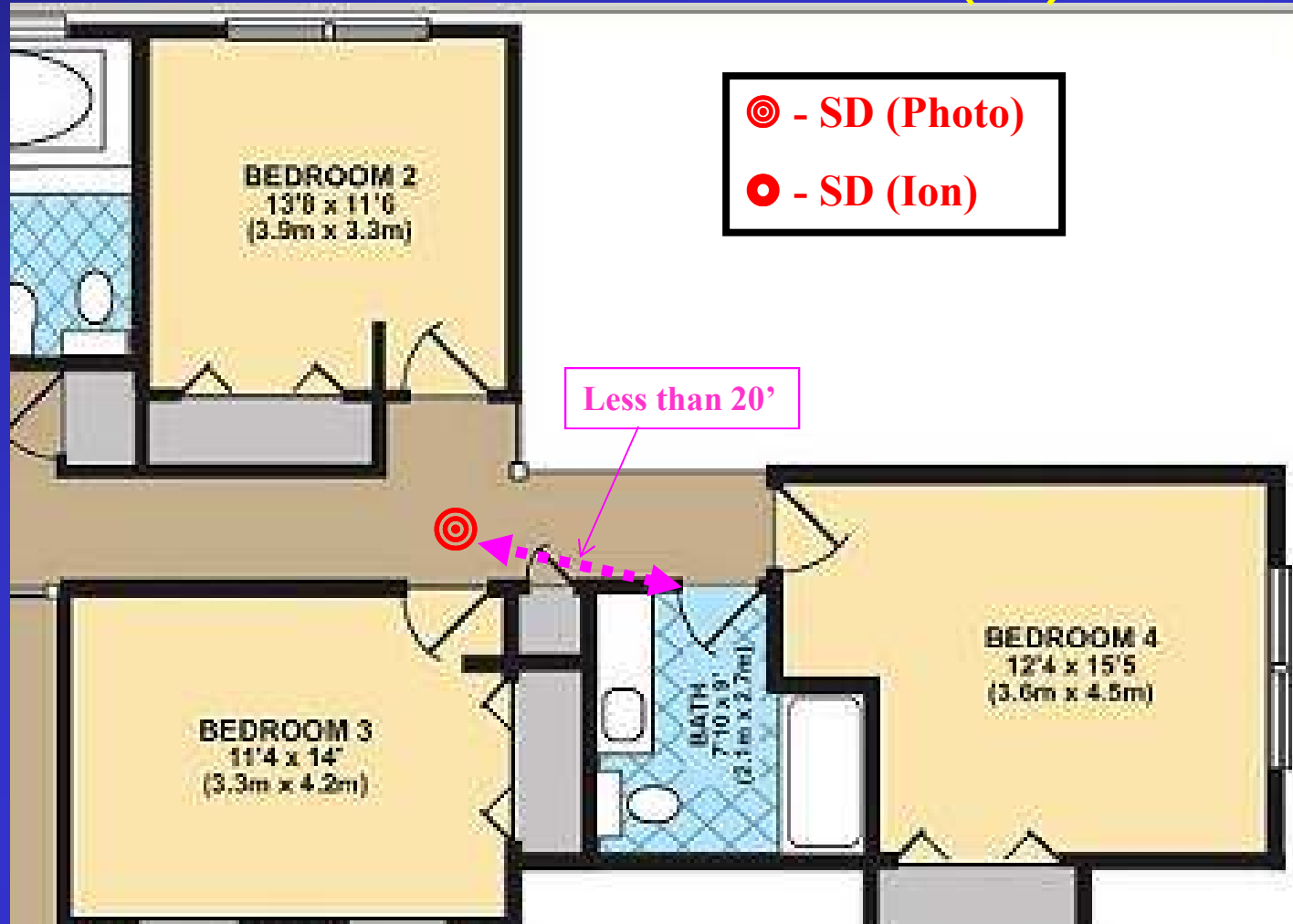
⊙ - SD (Photo)

● - SD (Ion)

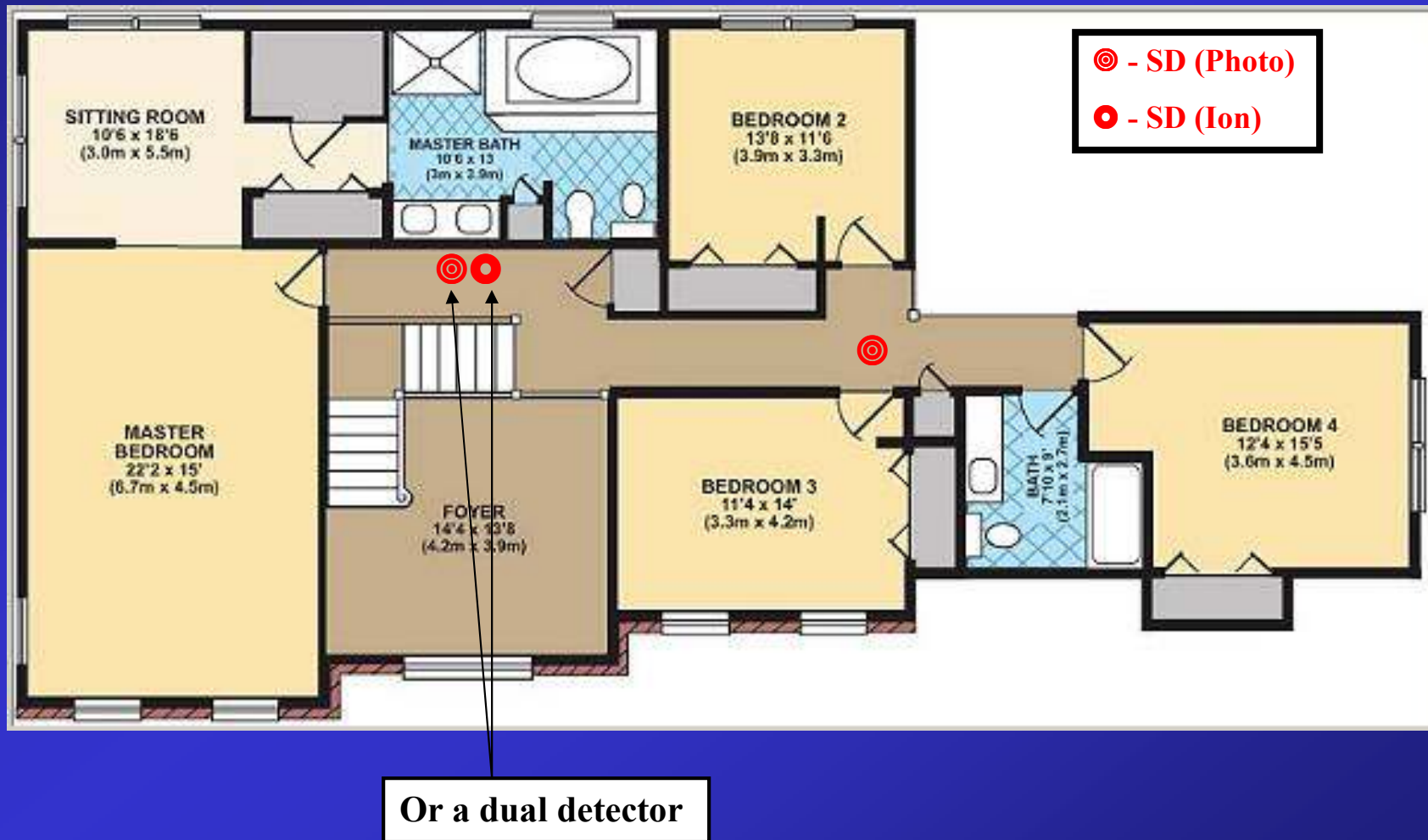


Detector Example

Second Floor (2)



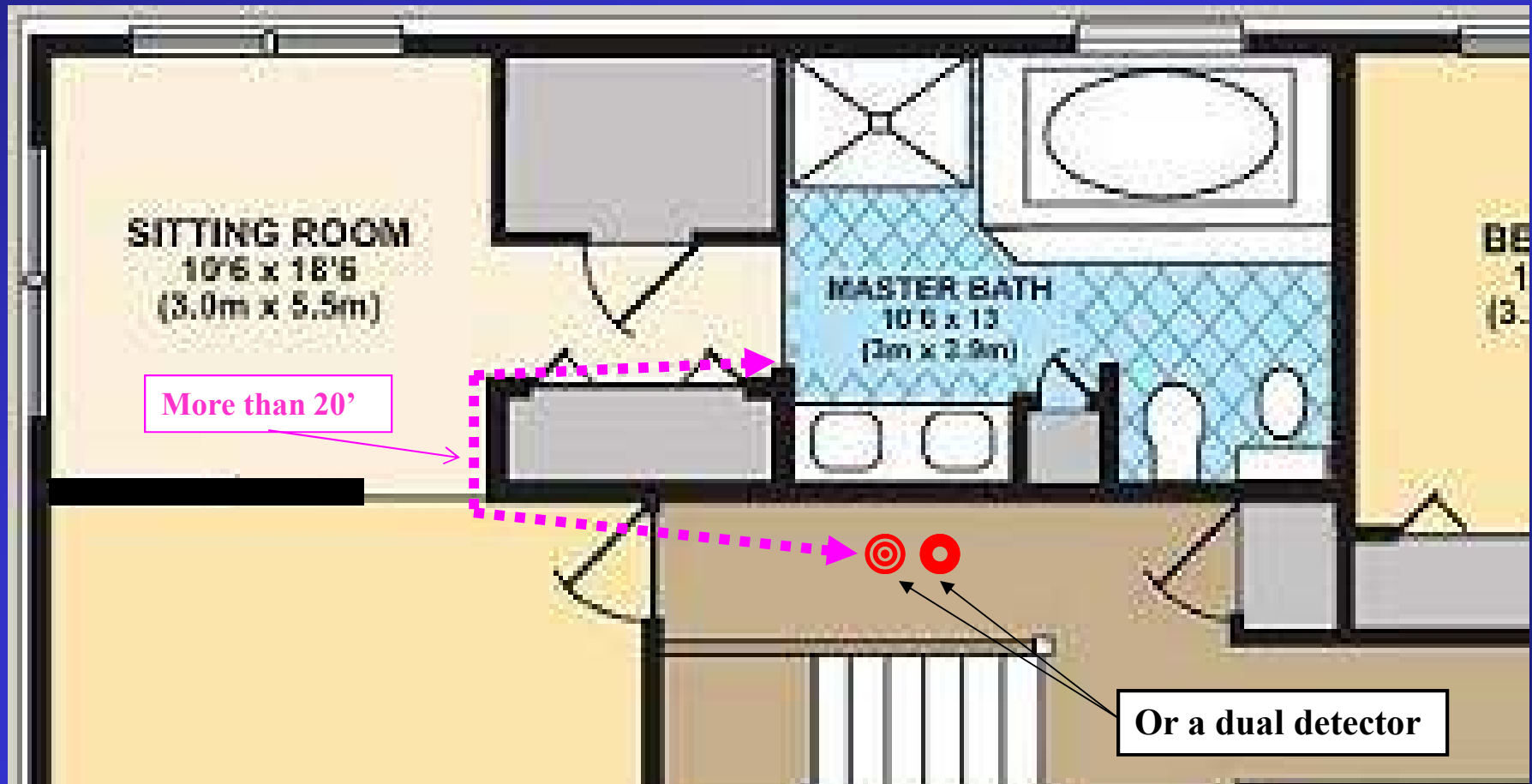
Detector Example Second Floor (3)



Detector Example Second Floor (3)

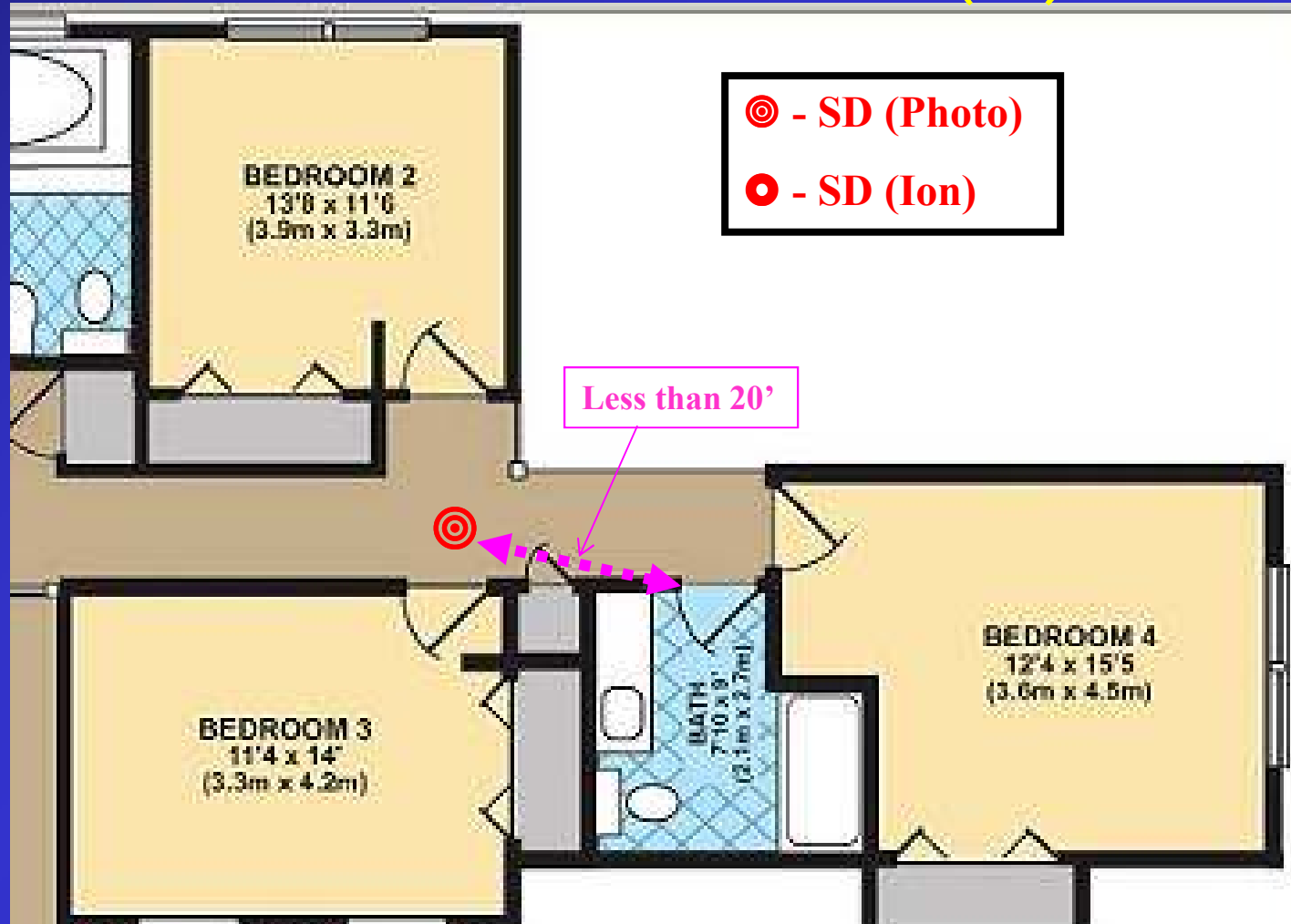
⊙ - SD (Photo)

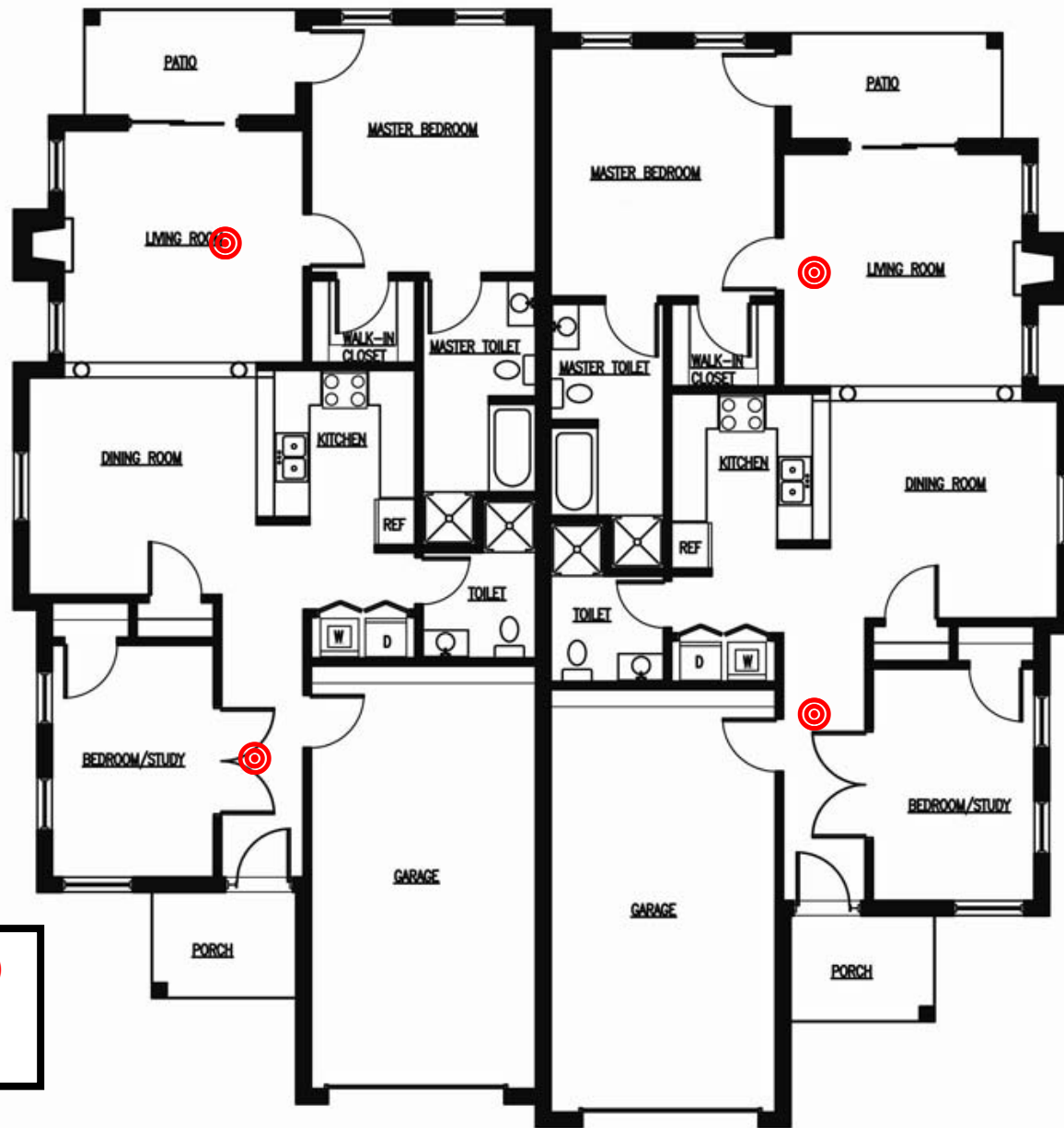
● - SD (Ion)



Detector Example

Second Floor (2)





⊙ - SD (Photo)

● - SD (Ion)

Smoke Detector Requirements

Dwellings permitted between 1975 and
August 27th, 1997



Not substantially altered to constitute new.

Smoke Detector Requirements

Second Edition of the MSBC:

- One and two family dwellings permitted after January 1st, 1975 and prior to July 1st, 1979.
- Not substantially altered to constitute new.

Smoke Detector Requirements

Second Edition of the MSBC

Smoke detectors shall be installed on:

- On each level of habitation.
- On the basement level.
- Outside each separate sleeping area.
- On the ceiling of each stairway leading to the floor above, near the base of, but not within each stairway.
- For each 1,200 ft² of area or part thereof for any level.

Smoke Detector Requirements

Second Edition of the MSBC

Smoke detectors shall be:

- Not installed located in or within 6' of a kitchen, cooking area or garage.
- Ceiling mounted (except for mobile homes).
- All smoke detectors must be interconnected.
- The power supplied from a permanently wired connection to an AC primary source of power or monitored batteries.
- The power shall be from a single branch circuit serving a habitable area.

Smoke Detector Requirements

Third Edition of the MSBC:

- One and two family dwellings permitted from July 1st, 1979 and prior to September 1st, 1980.
- Not substantially altered to constitute new.

Smoke Detector Requirements

Third Edition of the MSBC

Smoke detectors shall be installed on:

- On each level of habitation.
- On the basement level.
- Outside each separate sleeping area.
 - These smoke detectors can meet the requirements for the detectors required on the level.
- On the ceiling of each stairway leading to the floor above, near the base of, but not within each stairway.
- For each 1,200 ft² of area or part thereof for any level.

Smoke Detector Requirements

Third Edition of the MSBC

Smoke detectors shall be:

- The power supplied from a permanently wired connection to an AC primary source of power or monitored batteries.
- The power shall be from a single branch circuit serving a habitable area.

Smoke Detector Requirements

Fourth Edition of the MSBC:

- One and two family dwellings permitted from September 1st, 1980 and prior to March 1st, 1991.
- Not substantially altered to constitute new.

Smoke Detector Requirements

Fourth Edition of the MSBC

Smoke detectors shall be installed on:

- On each level of habitation.
- On the basement level.
- Outside each separate sleeping area.
 - These smoke detectors can meet the requirements for the detectors required on the level.
- On the ceiling of each stairway leading to the floor above, near the base of, but not within each stairway.
- For each 1,200 ft² of area or part thereof for any level.

Smoke Detector Requirements

Fourth Edition of the MSBC

Smoke detectors shall be:

- The power supplied from a permanently wired connection to an AC primary source of power or monitored batteries.
- The power shall be from a single branch circuit serving a habitable area.

Smoke Detector Requirements

Fifth Edition of the MSBC:

- One and two family dwellings permitted from March 1st, 1991 and prior to August 27th, 1997.
- Not substantially altered to constitute new.

Smoke Detector Requirements

Fifth Edition of the MSBC

Smoke detectors shall be installed on:

- On each level of habitation.
- On the basement level.
- Outside each separate sleeping area.
 - These smoke detectors can meet the requirements for the detectors required on the level.
- On the ceiling of each stairway leading to the floor above, near the base of, but not within each stairway.
- For each 1,200 ft² of area or part thereof for any level.

Smoke Detector Requirements

Fifth Edition of the MSBC

Smoke detectors shall be:

- The power supplied from a permanently wired connection to an AC primary source of power or monitored batteries.
- The power shall be from a single branch circuit serving a habitable area.

Smoke Detector Summary

Dwellings permitted from 1975 and prior to August 27th, 1997

Smoke detectors shall be installed on:

- On each level of habitation.
- On the basement level.
- Outside each separate sleeping area.
- On the ceiling of each stairway leading to the floor above, near the base of, but not within each stairway.
- For each 1,200 ft² of area or part thereof for any level.

Smoke Detector Summary

Dwellings permitted from 1975 and prior to August 27th, 1997

Smoke detectors shall be:

- The power supplied from a permanently wired connection to an AC primary source of power.
- The power shall be from a single branch circuit serving a habitable area.



Smoke Detector Requirements

Sixth Edition MSBC

Dwellings permitted from August 27th, 1997 and
prior to January 1st, 2008.



Not substantially altered to constitute new.

Smoke Detector Requirements

Sixth Edition of the MSBC:

- One and two family dwellings permitted from August 27th, 1997 and prior to January 1st, 2008.
- Not substantially altered to constitute new.

Smoke Detector Requirements

Sixth Edition of the MSBC

Smoke detectors shall be installed on:

- In each habitable story of a dwelling unit.
- In each the basement and cellar.
- In the immediate vicinity of bedrooms.
- In all bedrooms.
- For each 1,200 ft² of area or part thereof for any level.

Smoke Detector Requirements

Sixth Edition of the MSBC

Smoke detectors shall be:

- Interconnected with all other required smoke detectors in the dwelling.
- Photoelectric, if located within 20' of a kitchen or a bathroom containing a tub or shower.

Smoke Detector Requirements

Sixth Edition of the MSBC

Smoke detectors shall have:

- Secondary power supplied from monitored batteries.
- The power supplied from a permanently wired connection to an AC primary source of power.
- The power for single and multiple station smoke detectors shall be from a single branch circuit which also provides other electrical service to habitable and occupiable areas.

Smoke Detector Requirements

Sixth Edition of the MSBC

Smoke detectors shall have:

- The power for a household fire warning systems shall be from a dedicated branch circuit or the unswitched portion of a branch circuit also used for power and lighting of habitable and occupiable areas.

Smoke Detector Requirements

Sixth Edition of the MSBC

Two family dwellings that contain common areas (basements, interior stairways that serve both units) shall also be provided with smoke detectors in the following locations:

- All common basements.
- All common hallways.
- All common stairways.

Each detection device shall cause the operation of an alarm that is clearly audible in all bedrooms over background noise levels with all intervening doors closed.

Smoke/Heat Detector Requirements

Seventh Edition MSBC

Dwellings permitted January 1st, 2008 and after.



Smoke/Heat Detector Requirements

Seventh Edition of the MSBC:

- One and two family dwellings permitted from January 1st, 2008.
- Not substantially altered to constitute new.

Smoke Detector Requirements

Seventh Edition of the MSBC

Smoke detectors shall be installed:

- In each bedroom (sleeping area).
- Outside each separate bedroom (sleeping area) in the immediate vicinity of the bedroom (sleeping area).
- Near the base of all stairs lead to another occupied floor.

Smoke Detector Requirements

Seventh Edition of the MSBC

Smoke detectors shall be installed:

- On each story, including basements and cellars. In dwellings with split levels and without intervening door between the adjacent levels, a smoke detector installed on the upper level shall suffice for the adjacent lower level, provided that the lower level is less than one full story below the upper level.
- For each 1,200 ft² of area or part thereof for any level.

Smoke Detector Requirements

Seventh Edition of the MSBC

Smoke detectors shall be:

- Interconnected with all other required smoke detectors in the dwelling.
- Photoelectric, if located within 20' of a kitchen or a bathroom containing a tub or shower.
- If outside the 20', it can be a dual detector (photoelectric/ionization).
- Allowed to be a wireless system as long as the system meets NFPA 72.

Smoke Detector Requirements

Seventh Edition of the MSBC

Smoke detectors shall have:

- The primary power supplied from a permanently wired connection to an AC primary source of power.
- The primary power for single and multiple station smoke detectors shall be from either a dedicated locked branch circuit or a single branch circuit, which also provides other electrical service to a habitable space.

Smoke Detector Requirements

Seventh Edition of the MSBC

Smoke detectors shall have:

- The primary power for a household fire warning systems shall be from a dedicated branch circuit or the unswitched portion of a branch circuit also used for power and lighting of habitable space.
- Secondary power supplied from monitored batteries.

Heat Detector Requirements

Seventh Edition of the MSBC

A heat detector shall be installed:

- In any integral garage ('garage under') or attached garage to the main house.

For flat ceilings, the single heat detector shall be placed on or near the center of the garage ceiling.

For sloped ceilings having a rise to run greater than 1' in 8', the single heat detector shall be placed in the approximate center of the vaulted ceiling but no closer than 4" to any wall.

Heat Detector Requirements

Seventh Edition of the MSBC

The heat detector is required to be interconnected to all smoke detectors of the required household fire warning system.

The required garage heat detector is not required to incorporate audible alarm notification nor is any audible notification device required in the garage.

Smoke Detector Requirements

Seventh Edition of the MSBC

Two family dwellings that contain common areas (basements, interior stairways that serve both units) shall also be provided with smoke detectors in the following locations:

- All common basements.
- All common hallways.
- All common stairways.

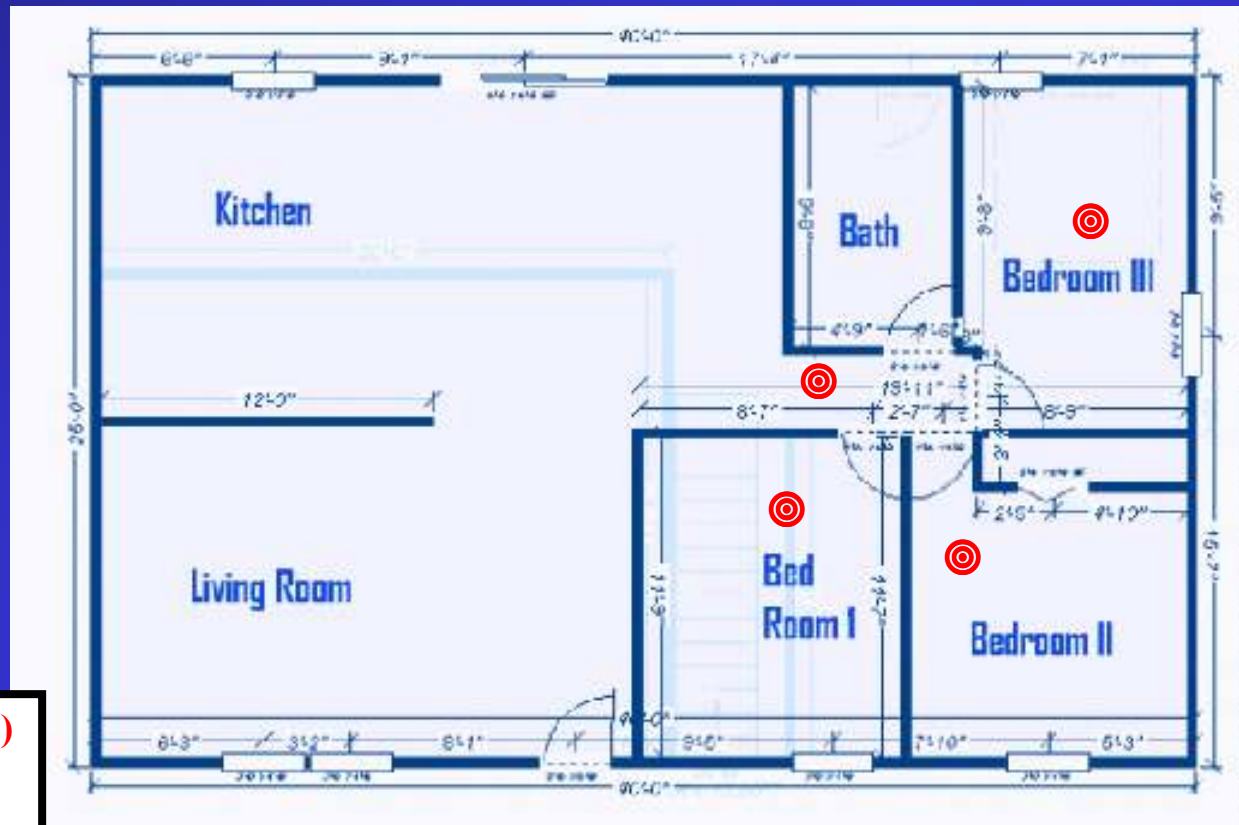


Each detection device shall cause the operation of an alarm that is clearly audible in all bedrooms over background noise levels with all intervening doors closed.

MSBC – 7th Edition
Smoke Detector Examples

Detector Example

Dwelling built under Seventh Edition MSBC



Detector Example

Dwelling built under Seventh Edition MSBC

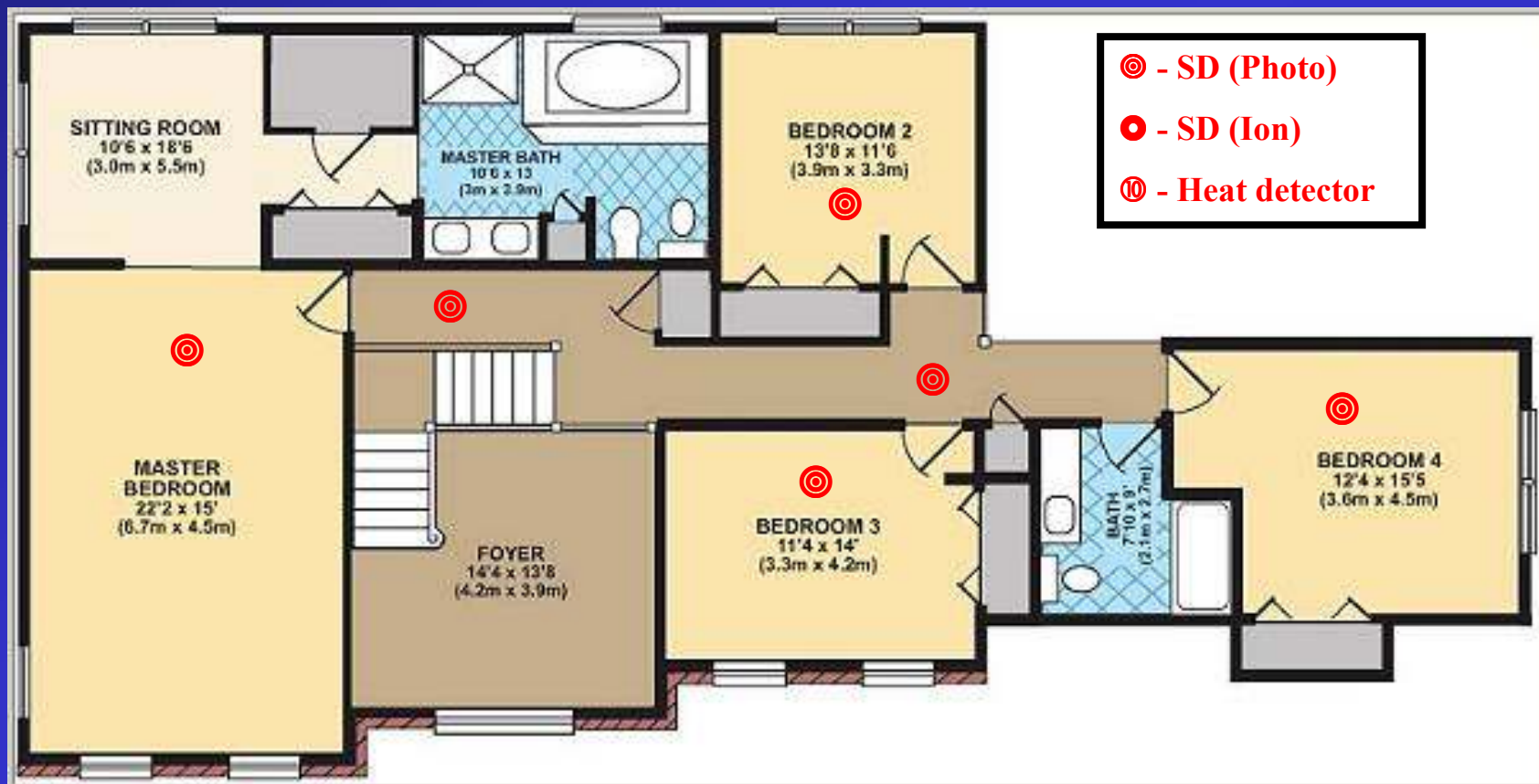


- ⊙ - SD (Photo)
- - SD (Ion)
- ⑩ - Heat detector

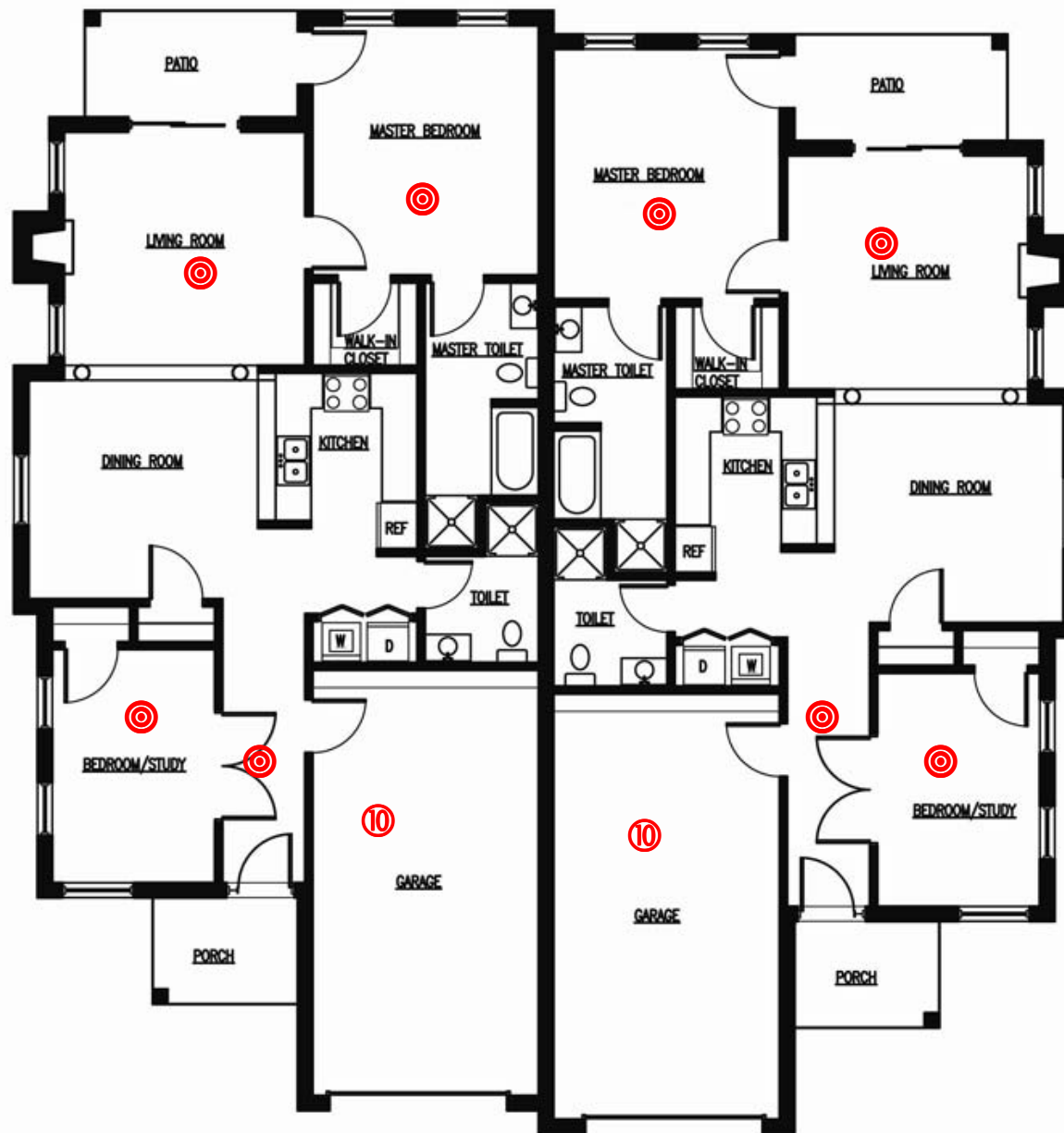
First Floor is approximately 1,700 ft², therefore an additional smoke detector must be added.

Detector Example

Dwelling built under Seventh Edition MSBC



2nd Floor is approx. 1,600 ft². No extra smokes are needed. 5 smokes times 1,200 ft² can cover up to 6,000 ft² total area.



- ⊙ - SD (Photo)
- - SD (Ion)
- ⊙ - CO
- ⊗ - Heat detector

Carbon Monoxide Detector Requirements for One and Two Family Dwellings



M.G.L. c. 148 s. 26F¹/₂

One and Two Family Dwellings Subject to M.G.L. c. 148 s. 26F $\frac{1}{2}$

Dwellings permitted prior to January 1st, 2008.



M.G.L. c. 148 s. 26F½

**CO alarms required in certain
residential structures; regulation;
inspections; enforcement**

M.G.L. c. 148 s. 26F½

Every dwelling, building or structure, occupied in whole or in part for residential purposes, that:

- Contains fossil-fuel burning equipment; or
- Incorporates enclosed parking within its structure

Shall be equipped by the owner with working, approved carbon monoxide alarms in conformance with the requirements of the board of fire prevention regulations.

M.G.L. c. 148 s. 26F½

The board of fire prevention regulations shall promulgate such regulations as may be necessary to effectuate this section including, but not limited to, the type, installation, location, maintenance and inspectional requirements of carbon monoxide alarms.

- 527 CMR 31.00

M.G.L. c. 148 s. 26F½

Every dwelling, building or structure, occupied in whole or in part for residential purposes, shall, upon sale or transfer of such dwelling, building or structure, be inspected by the head of the fire department for compliance with the requirements of this section.

The head of the fire department shall enforce this section.

M.G.L. c. 148 s. 26F½

The M.S.B.C. may impose stricter carbon monoxide alarm requirements for new construction or dwellings, buildings, or structures substantially renovated so as to constitute the equivalent of new construction. Every such dwelling building or structure, occupied in whole or in part for residential purposes, shall, upon sale or transfer of such dwelling, building or structure, be inspected by the head of the fire department for compliance with the carbon monoxide alarm requirements of the M.S.B.C. in effect on the date of the issuance of the relevant building permit.

527 CMR 31.00 – CO Alarms

527 CMR 31.01

Purpose:

The purpose of 527 CMR 31.00 is to provide minimum requirements for the type, installation, location, maintenance, and inspection of carbon monoxide alarms in every dwelling, building or structure in accordance with the provisions of M.G.L. c. 148 s. 26F $\frac{1}{2}$.

527 CMR 31.01

Scope:

527 CMR 31.00 shall apply to every dwelling, building or structure including those owned and operated by the Commonwealth, occupied in whole or in part for residential purposes, that:

- Contains fossil-fuel burning equipment; or
- Incorporates enclosed parking within its structure.



527 CMR 31.02

CO Alarm Protection shall mean CO alarm protection that may consist of either:

- (a) battery powered and wireless appliances, or
- (b) ac plug-in with battery back up, or
- (c) ac primary power source with battery back up, or
- (d) low voltage or wireless systems with secondary power, or
- (e) Combination Appliance.



527 CMR 31.02

At a minimum, all such CO Alarm Protection equipment shall operate as a Single Station Alarm Device or Single Station CO Alarm.

527 CMR 31.02

Combination Appliance:

Shall mean a combination photoelectric smoke detector and CO alarm which may be battery or ac powered with battery back up.

A combination ionization smoke detector and CO alarm may be utilized if it is installed not less than 20' from any bathroom or kitchen entryway.

527 CMR 31.02

Combination Appliance:

Such Combination Appliances shall employ both simulated voice and tone alarm features which clearly distinguishes between CO and smoke notification, in accordance with NFPA 720: 5.3.4.

527 CMR 31.02

Fossil Fuel Burning Equipment:

Any device, apparatus or appliance which is designed or used to consume fuel of any kind which emits carbon monoxide as a by-product of combustion.

527 CMR 31.02

NFPA 720:

Shall mean National Fire Protection Association (NFPA) 720 entitled “Standard for the Installation of Carbon Monoxide Warning Equipment in Dwelling Units”, 2005 Edition.

Note: Although not enforceable by 527 CMR, the 2009 NFPA 720 has been published.

527 CMR 31.03

The installation of CO detectors in accordance with:

- 527 CMR 30.00 - Unvented Propane or Natural Gas-fired Space Heaters; or
- 248 CMR, The Commonwealth of Massachusetts Fuel Gas and Plumbing Code

Shall satisfy the requirements of 527 CMR 31.00 for that level, provided the installation complies with 527 CMR 31.04(1)(a) and (b).



527 CMR 31.04

Specific Installation Provisions:

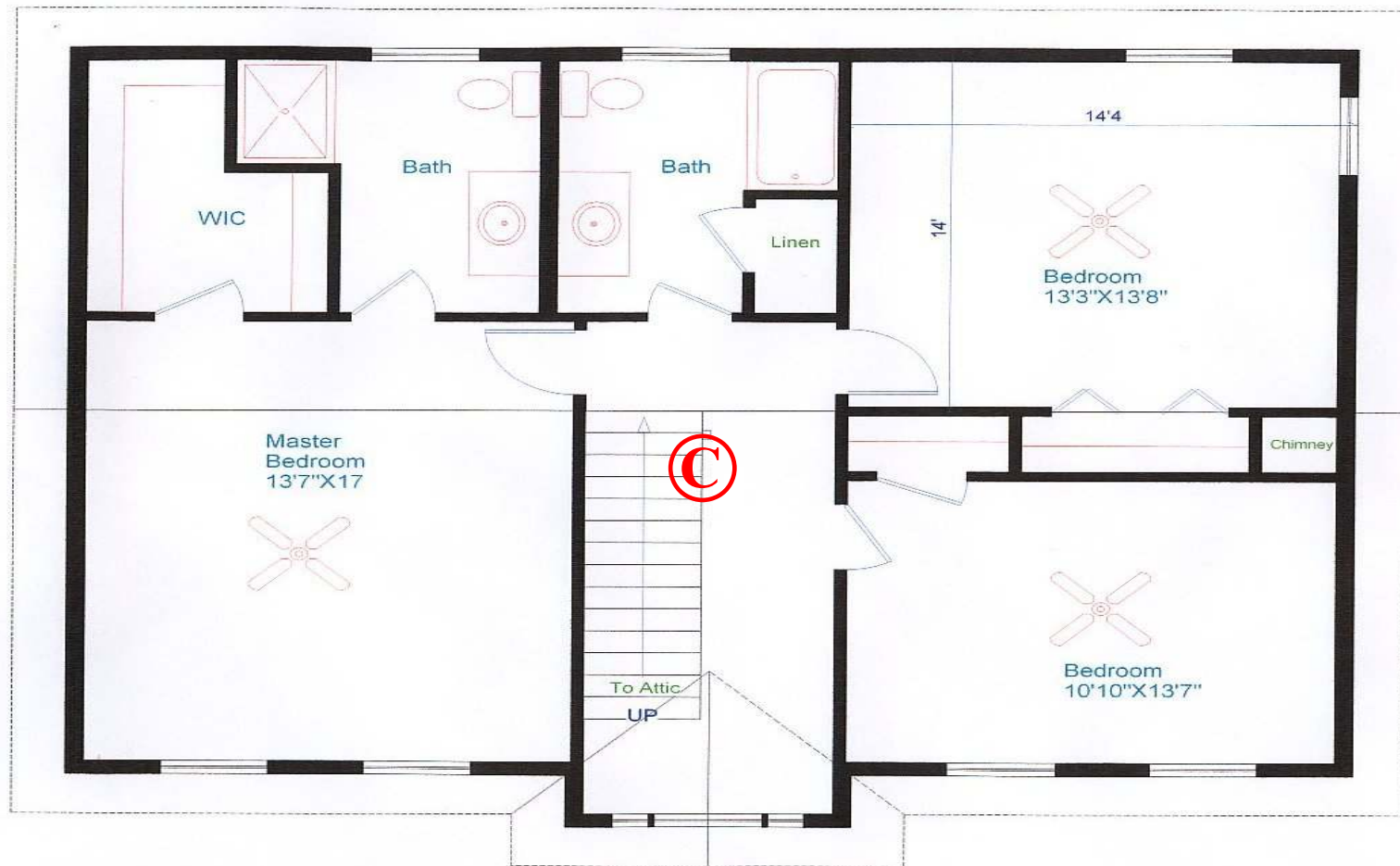
Every Residential structure that presently or in the future contains fossil fuel burning equipment or has enclosed parking shall be equipped, by the owner, landlord or superintendent, with working and Listed CO Alarm Protection.

527 CMR 31.04

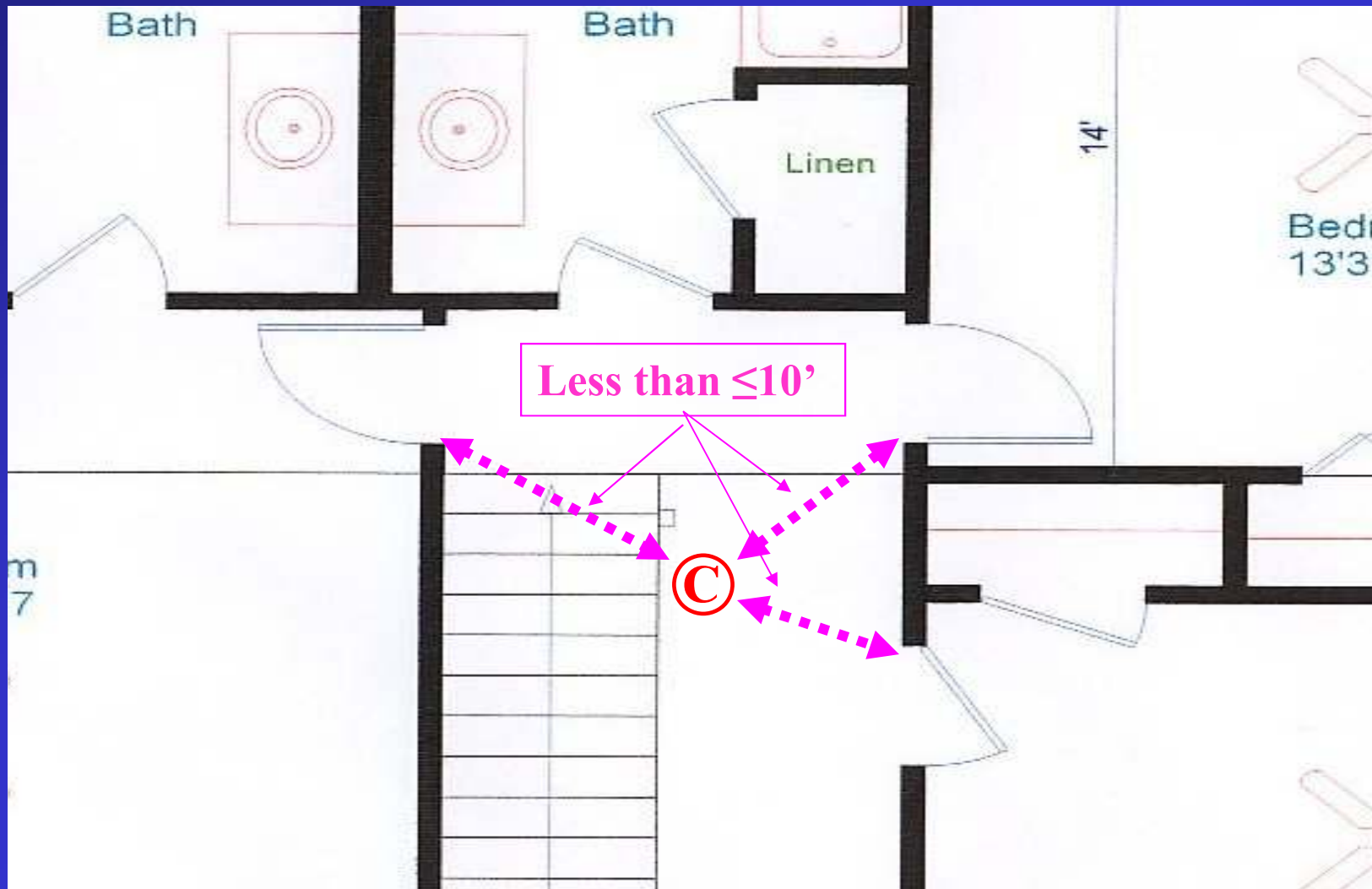
CO Alarm Protection shall be located:

- In each level of each dwelling unit.
- Habitable portions of basements, cellars and attics, but not including crawl spaces.
- When mounting CO alarm on a level of a dwelling unit with a sleeping area, the alarm shall be installed in the immediate vicinity of the sleeping area. The CO alarm shall not exceed 10' as measured in any direction from any bedroom door.

CO Detector Example



CO Detector Example



CO Alarm Requirements for One and Two Family Dwellings

Dwellings permitted after January 1st, 2008*.



* - Built under the provisions of the MSBC - 7th Edition.

CO Alarm Requirements

Seventh Edition of the MSBC

Combination Appliance:

A combination photoelectric smoke detector and CO alarm appliance which is AC powered with battery backup. Such combination appliance shall employ both simulated voice and tone alarms features which clearly distinguishes between CO and smoke notification, in accordance with NFPA 720: 5.3.4.

CO Alarm Requirements

Seventh Edition of the MSBC

A CO detector shall be installed on:

- On each story of a dwelling unit, including basements and cellars (but not including crawl spaces and uninhabitable attics).
- When mounting a CO detector on a story with a bedroom, the detector shall be located outside the bedroom. A CO detector shall be installed no more than 10' outside any bedroom door.

CO Alarm Requirements

Seventh Edition of the MSBC

Carbon monoxide detector required locations set forth in 527 CMR 30.00 and 248 CMR must also be satisfied.

CO Alarm Requirements

Seventh Edition of the MSBC

CO detectors shall be either:

- Listed, interconnected 120 volt,
- Listed, low-voltage combination system, or
- Listed, wireless system.



CO Alarm Requirements

Seventh Edition of the MSBC

All CO alarms shall have secondary power supplied from monitored batteries in accordance with NFPA 72.

- For fire alarm control units, the panel battery shall serve as the source of secondary power.
- For wireless systems, the panel battery shall serve as the source of secondary power.

CO Alarm Requirements

Seventh Edition of the MSBC

All CO detectors shall be UL 2034 listed or UL 2075 listed.

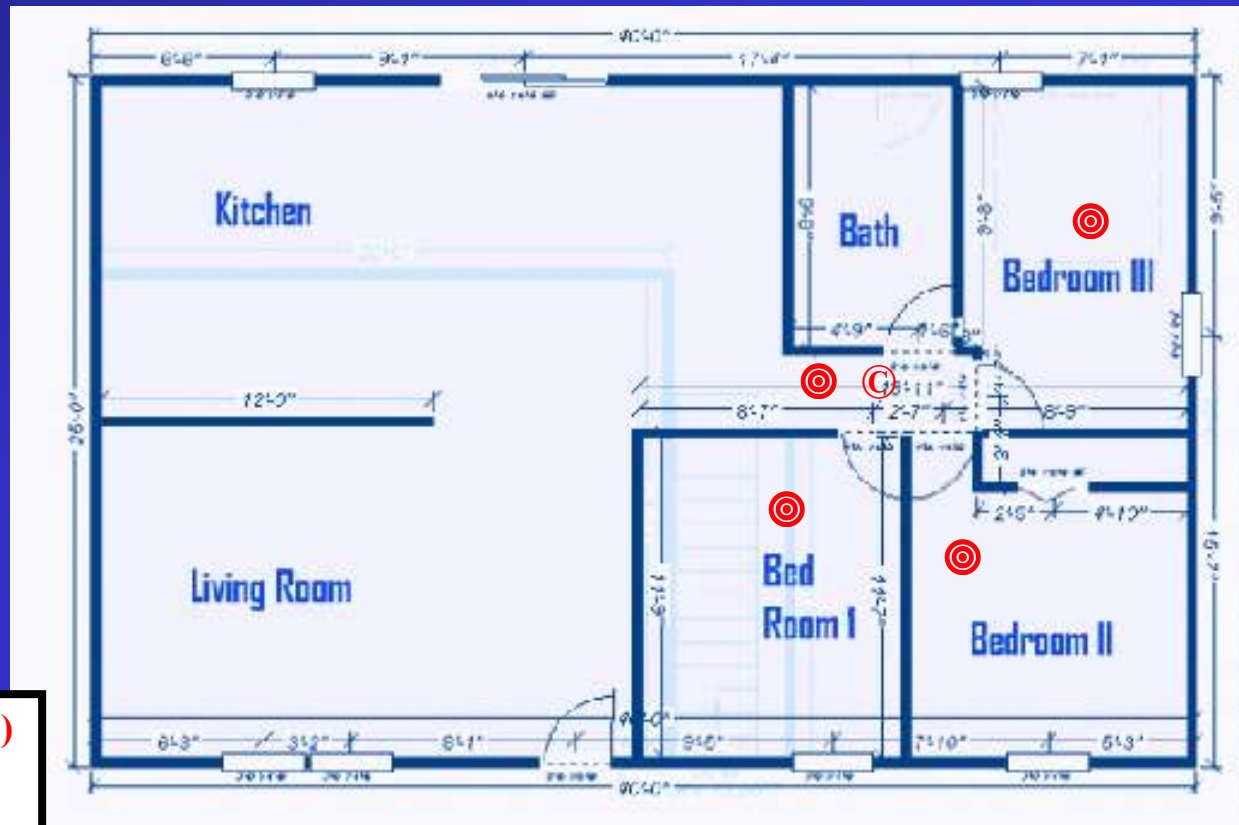
Required CO detectors are not required to be interconnected to the required household fire warning system, but where interconnection is desired, such CO detectors shall be compatible with the fire detection devices.

Fire alarms shall have precedence over CO alarms.

MSBC – 7th Edition
Carbon Monoxide Examples

Detector Example

Dwelling built under Seventh Edition MSBC



- ◎ - SD (Photo)
- - SD (Ion)
- ◎ - CO

Detector Example

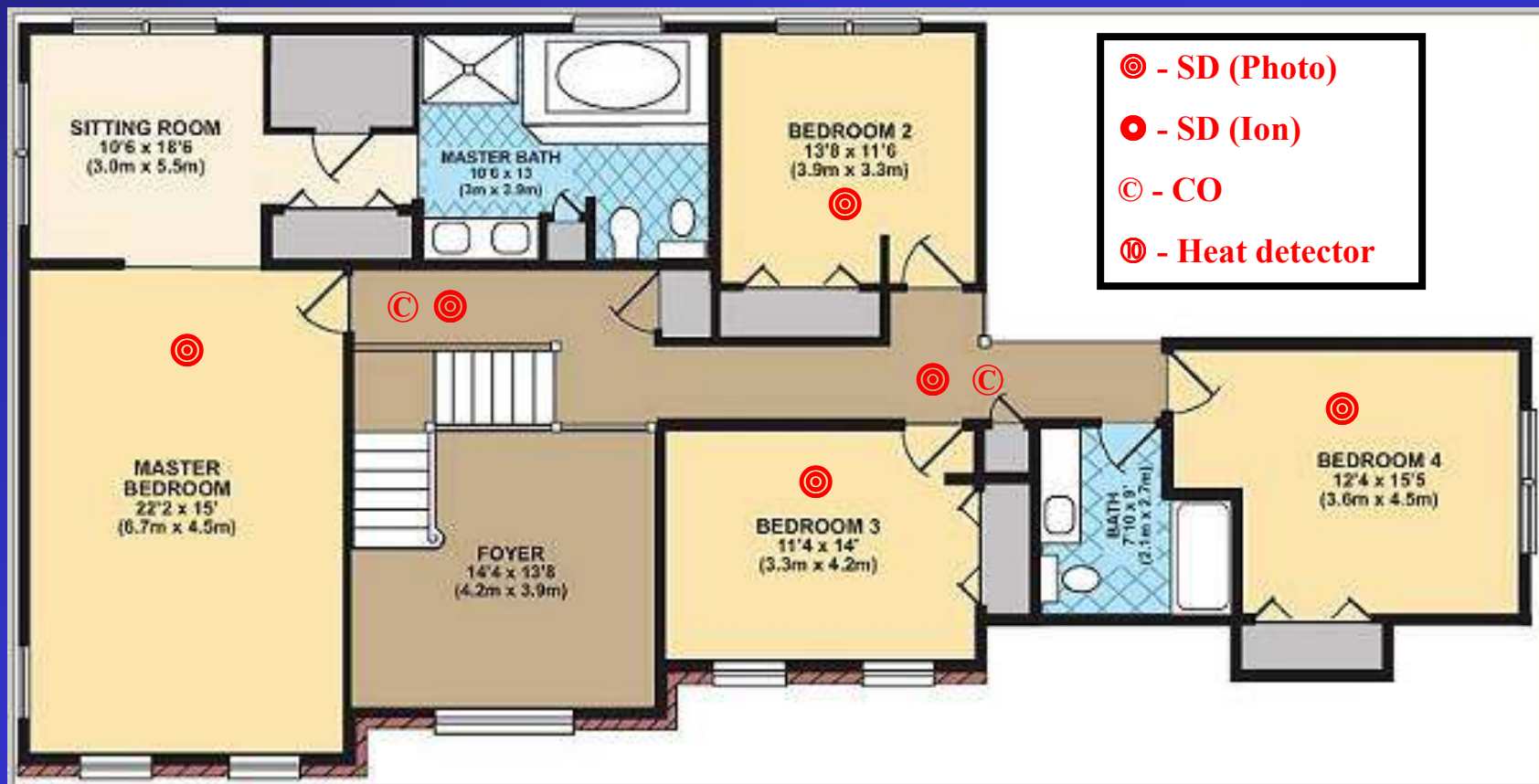
Dwelling built under Seventh Edition MSBC



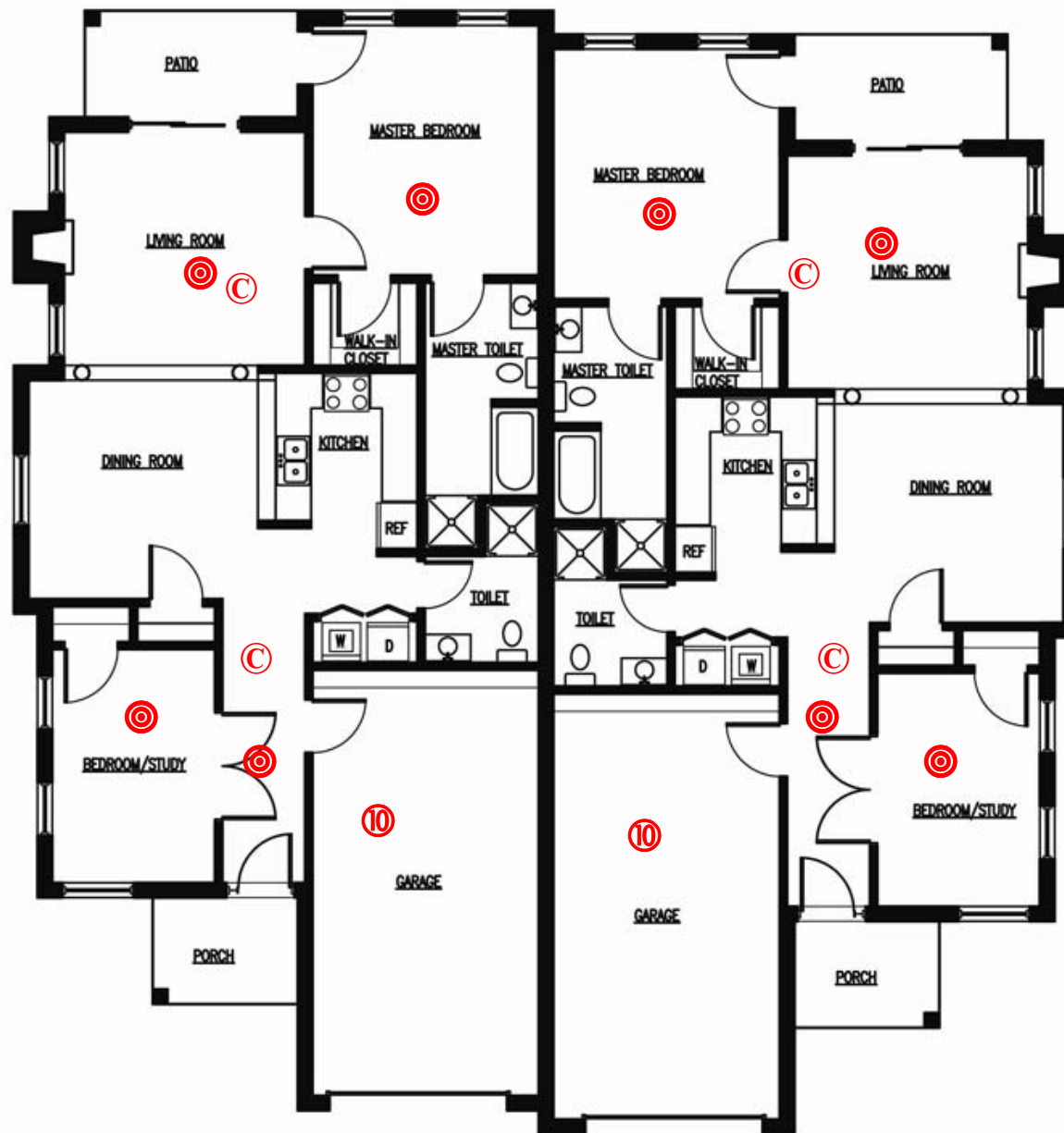
First Floor is approximately 1,700 ft², therefore an additional smoke detector must be added.

Detector Example

Dwelling built under Seventh Edition MSBC



2nd Floor is approx. 1,600 ft². No extra smokes are needed. 5 smokes times 1,200 ft² can cover up to 6,000 ft² total area.



⊙ - SD (Photo)

● - SD (Ion)

Ⓒ - CO

⑩ - Heat detector

Websites:

MGL Chapter 148:

www.mass.gov/legis/laws/mgl/gl-148-toc.htm

Mass. State Fire Code (527 CMR):

www.mass.gov/dfs

Mass. State Building Code (780 CMR):

www.mass.gov/dps

Questions?

Contact Information:

Code Compliance Desk Officer: 978-567-3375

**Department of Fire Services
Office of the State Fire Marshal
PO Box 1025
State Road
Stow, MA 01775**

www.mass.gov/dfs